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MEDICAL NEWS LETTER

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Diagnosis of Conversion (Hysterical) Reactions

Recent Literature and Case Report

LT Gilbert C. Morrison MC USNR*. Proceedings of the Monthly Staff Meetings of the U. S. Naval Hospital, NNMC, Bethesda, Md., 1962 - 1963.

The understanding and diagnosis of conversion reaction—or conversion hysteria—has interested many generations of physicians and psychiatrists. The word "hysteria" means "wandering of the uterus" and was used by the Greeks at the time of Pericles, about 450 B. C., who recognized the relation of the disorder to sexual disturbance. Twenty-four centuries later we find that the relationship of sexuality and other instinctual drives to conversion reactions continues to inspire study in medicine and psychology. From the past century, we think immediately of such names as Charcot, Janet, Breuer, and Freud—all of whom studied and wrote extensively of their findings and theories of conversion hysteria.

A significant motivating factor which led to interest in this subject—and to this paper—has been the question in recent years regarding the possible decreasing incidence of hysterical conversion reactions. Medical history is replete with references to a variety of hysterical conversions; there seems to be no question that symptoms appear to gain and lose interest with dependence on both cultural changes and symptom popularity. One only has to remember the incidence of witch hunting in the seventeenth century in this country, "swooning" of the late nineteenth century, and "shell-shock" of World War I to realize the relationship of this condition to the popular interests and fears of the day.

As recently as the Orthopsychiatric Association meeting in March of 1963, James Knight and co-workers at Tulane University reported an outbreak of hysteria in a public school in Louisiana in the 1961 - 1962 school year. At this time, twenty-two pupils—all female except one—experienced hysterical episodes or "black-out spells." The outbreak began when sexual promiscuity was discovered in the school by the authorities. The rumor spread that all girls would be given pregnancy tests and those found to be pregnant would be sent to the State Correctional School. The "epidemic" subsided during the summer months and no students have had episodes during the 1962 - 1963 school year.

Chodoff writes (4) of the decreased psychiatric interest in recent decades, "This is undoubtedly partly the result of an actual diminution in the occurrence of conversion hysteria due to change in the cultural climate and a wider dissemination of education with an increase in sophistication, a less authoritarian social structure, and a decrease in sexual prudery and inhibition." Ne notes that Freud's work was itself a significant influence in bringing

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about cultural changes, such as a decrease in secrecy and prudery about sex and an increase in understanding of the fact that physical symptoms can result from emotional disturbance.

In a recent publication titled "Problems of Estimating Changes in Frequency of Mental Disorders," it is stated that "Conversion hysteria ranked high on the list of conditions about which our colleagues were most certain in predicting a change in frequency." The literature revealed a marked decrease in papers on conversion hysteria between 1910 and 1926, but the question is raised as to whether this reveals a fall in frequency or a change in fashion within the profession. The true incidence of hysterical conversion is almost impossible to estimate because mortality rates are of no value, and morbidity rates would reflect different primary diagnoses and often would be from other than psychiatric services. The possible decrease in frequency may actually reflect a decrease in this illness among educated people.

It is recommended in the study that the possible alteration in frequency be determined in several categories, including: (1) hysterical conversion signs and symptoms, such as paralyses of limbs, loss of special senses, disorders of movement, or large areas of anesthesia on trunk or limbs; (2) symptoms of a subjective nature, such as pains or strong sensations; (3) those characterized by alterations of consciousness, such as fugue states and amnesia; and (4) symptoms of a personal nature such as impotence, frigidity, and vaginismus.

Differential Diagnoses

Stewart Wolf, in a recent paper titled "Emotions and Disease," quotes John Hunter's statement, "There is not a natural action in the body, whether voluntary or involuntary, that may not be influenced by the peculiar state of the mind at the time."

The differential diagnosis between conversion reactions, psychophysiologic (or psychosomatic) reactions, schizophrenia (9), and malingering is of prime significance in determining the true incidence of this illness and the successful treatment of causes rather than symptoms of the illness. A conversion reaction may, in certain respects, simulate an astonishing variety of organ symptoms; certain principles should be held in mind in making a differentiation. The physician should ascertain if sensory or motor disturbances are consistent with known anatomical facts. Conversion symptoms often change from time to time with suggestion. Try to establish whether or not the sign or symptom appeared during a time of emotional unrest or change. It is important to clarify whether the signs and symptoms serve a purpose in the life of the patient. In actual physical disease, the patient readily accepts or even suggests that his disability is of mental origin, while the patient whose disability is really psychogenic eagerly seeks for a physical basis. Character structure of the patient and the previous level of functioning should be carefully evaluated.

Noyes (10) has stressed the above distinctions and continues, "the confusion of a conversion reaction with malingering is more apt to be made by physicians who consider all hysterics as malingerers and believe that the

hysteric could control his symptoms if he wanted to." Discrepancies, contradictions, and exaggerated symptoms are quite frequent in malingering; also, the malingerer expresses much concern about his symptoms. As has been noted in the classic form of conversion hysteria, the patient manifests little concern about his symptoms; however, because of a considerable component of anxiety that often accompanies a recently established conversion reaction, the patient may show signs of concern.

The term conversion reaction is synonymous with conversion hysteria, the name by which it is better known. Because of the striking and dramatic manifestations that may accompany this reaction, it was the first of the psychoneuroses to receive attention. Alexander (2) has stressed that the underlying mechanisms of conversion hysteria are essentially the same as in the common expressive innovations of the body, such as weeping, laughter, and blushing. Conversion symptoms express and relieve emotional stresses through bodily changes and have no other function but to relieve emotional tension. The difference between normal bodily expression and hysterical conversion symptoms is that the latter are individual uncommon innovations, and underlying emotional content is completely repressed into the subconscious. In a conversion reaction, anxiety—instead of being consciously experienced, either diffusely as in anxiety reactions or displaced as in phobias—is "converted" into functional symptoms in organs or parts of the body innervated by the sensory-motor nervous system. Conversion symptoms not only serve to prevent or lessen any consciously felt anxiety, but usually symbolize the underlying conflict which produces the anxiety. The hysterical symptoms may be regarded as expressing a conflict or idea in symbolic form. It may "convert" a mental image into an impressive body symptom as when a hysterical paralysis of an arm expresses a wish to do a forbidden act, yet ambivalently prevents its accomplishment. The form of the conversion symptom is determined by some feature of the situation it was designed to meet, as will be noted in the accompanying case report.

If a person were consciously to counterfeit some physical sign or symptom or some mental disturbance for the purpose of obtaining a particular objective, we would say he is malingering. Conscious recognition of its intent is not necessary, however, in order that behavior may be purposive. Some hysterical phenomena are on the borderline between psychoneurotic reactions and simulation and, therefore, come close to malingering. Just where the line between simulation and hysteria should be drawn is often quite arbitrary. In both there is a subtle interweaving of conscious factors. Both are related to some definitive purpose, usually protective or wish-fulfilling in nature. This is not surprising since the difference in the hysteric's mind between reality and fantasy is often vague. It is essential to view both possibilities as unconscious expressions of the need for help; both result from the patient's inability to meet the demands or stresses of his life situation.

The immediate factor in the production of hysteria is some anxiety-producing situation. With the frequent exception of the traumatic hysterias, it is found that conversions tend to develop on a certain personality background

characterized by immaturity in psychosexual and emotional fields. Puberty and early adolescence are favorite periods for the appearance of hysteria. What may be called the normal psychic characteristics of that period will often be found persisting in the mental life of the adult hysteric.

Role of the Physician

The patient who is reacting with psychophysiologic symptoms thinks that these constitute his illness and does not understand that the essential difficulties are his conflicts and anxieties, his inability to establish order, peace, and security in his personal life. Thile the patient can scarcely be expected to recognize that mental or personality disorders may manifest themselves in terms of the body, the physician must remember that organs may react to anxiety in many ways. It is significant that psychogenic illness may masquerade under the guise of physical symptoms, also that mental illnesses are not ordinarily secondary to physical illnesses. Because such mental illness is either not recognized or is not treated properly, many maladjusted persons go from doctor to doctor and receive treatment that only aggravates their personality problems. If emotional disorders are misidentified or mistreated as organic diseases, the tendency of such disorders will not be toward recovery, but toward chronicity. By the same token, the diagnosis of psychiatric illness is not based on the exclusion of physical illness, but more specifically by the findings of abnormal or precipitating personality patterns and pathologic modes of behavior.

Negative findings on physical and laboratory examinations cannot be counted as positive findings in the psychiatric evaluation. If, however, incidental pathologic organic conditions are found in the physical evaluation of the patient, his anxiety is apt to become fixed on a symptom or finding with even greater rejection and denial of concomitant illness of psychogenic origin. Repeated tests and examinations tend to fix the idea in the patient's mind that he must certainly have a "physical" illness. He will resist increasingly the idea that emotions may have a part in the production or perpetuation of his illness. In a similar sense, except when symptoms are acute, surgery should be avoided in the neurotic person until emotional factors have been investigated.

Noyes (10) has stressed, in distinguishing psychophysiologic symptoms from conversion hysteria, that both arise from emotional factors and both produce "functional" physical symptoms. It might be suggested that they are essentially the same, psychodynamically and physiologically. This, however, is not the case. The physiologic symptom is produced by the fact that emotions may influence the autonomic nervous system (vegetative nervous system) with resulting stimulation or inhibition of the function of a visceral organ. Psychophysiologic reactions, therefore, represent the disturbed physiologic response of an organ to psychologic stress and tension acting through the vegetative nervous system. Physiologic changes are set up in an organ by autonomic nerve impulses generated as a result of emotional conflict or tension. The effects of emotion are seen especially in secretion, vascularity, and the motility of the viscera. In some cases, the prolonged disturbance in

the function of an organ may lead to structural changes which may threaten life.

In conversion hysteria, the symptom is not produced through the vegetative nervous system, but is the symbolic expression—either through the voluntary neuromuscular or through the sensory-perceptive systems—of emotionally charged psychologic content. Conversion hysteria is quite effective in alleviating anxiety, and the patient's relative calmness and indifference in the presence of a serious disability has been called "la belle indifference."

Conversion hysteria can include a wide variety of clinical manifestations and involve both motor and sensory modalities. Dr. Abse, in his introduction to Hysteria in the American Handbook of Psychiatry, describes gross paralytic, spasmotic, and convulsive motor disturbances, exaggeration diminution or perversion of sensation, and dumbness, deafness, or blindness.

A short review of the literature would include such symptoms as convulsive hysteria, paralyses, involuntary movements, such as habit spasm and various tics including writer's cramp—although often associated with obsessive compulsive features. There would also be sensory disturbances of which the most common and persistent is pain, including various types of headaches, pain in the back, and abdominal pain, all of which can simulate many organic diseases. Diminution of sensation is common and sometimes amounts to anesthesia, although these anesthesias do not follow typical neural distributions but involve a limb or part of it, such as the glove and stocking syndromes. Localized areas may be included such as pharyngeal anesthesia. Concentric contraction of visual fields has been described, for instance, gun-barrel vision. The feeling of a lump in the throat, globus hystericus, is a frequent complaint of many patients.

(To be continued)

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Salmonellosis and Shigellosis

Report of 169 Cases

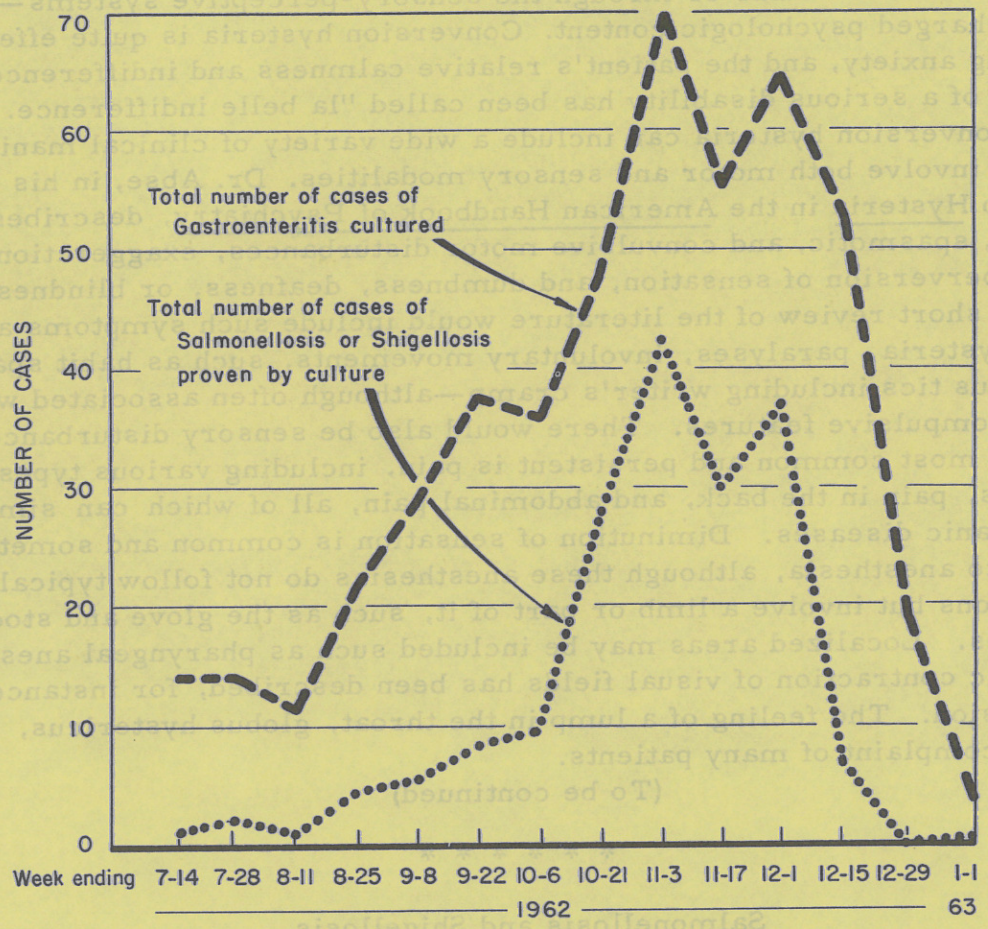
LT H. L. Metcalf MC USN, Station Hospital, Naval Air Station, Port Lyautey, Morocco.

During the period, 1 July 1962 - 1 January 1963, a large number of confirmed cases of gastrointestinal salmonellosis or shigellosis were seen as outpatients at the Station Hospital, U. S. Naval Air Station, Port Lyautey, Morocco. Most of the cases were among wives and children of service personnel living off-base in Kenitra, a town adjacent to the air station and situated at the delta of one of Morocco's largest rivers, the Qued Sebou. Similar cases were observed in military personnel on whom fecal cultures were generally not performed.

Of a total of 481 cases of gastroenteritis checked by culture, Salmonella were isolated from 33 and Shigella from 136, for a total of 169 cases with known etiology. During the outbreak, one death occurred from dysentery and several patients were hospitalized for treatment of dehydration.

or electrolyte imbalance. Figure 1 illustrates the occurrence of cases during the period of study.

Figure I.



Laboratory Methods and Results

Rectal swabs or stool swabs were streaked on McConkey's, Salmonella-Shigella, and Endo agars. Colonies which were colorless and did not ferment lactose were then streaked on Kiegler's iron medium and urea agar. Carbohydrate fermentation reactions which were tested were Xylose, dextrose, maltose, lactose, rhamnose, manitol, dulcitol, and salicin. Final identification in the hospital laboratory was made with salmonella-shigella typing sera (FSN 6505-160-0960). Representative specimens were sent to U.S. Navy Preventive Medicine Unit No. 7, Naples, Italy, and to the U.S. Naval Medical School, Bethesda, Md., for confirmation. Final identification of the Salmonella was Salmonella typhimurium and of the Shigella, Shigella flexneri, Type IIa.

Water specimens were collected after flaming the faucet with a portable torch. The specimens were caught in sterile tubes containing 0.5 ml 10% thiosulfate broth each. Specimens (10 ml) of water were transferred to fermentation tubes containing 10-15 ml brilliant green-bile liquid medium.

Specimens from tubes showing growth after 24-48 hours were purified and subcultured for identification as described in the previous paragraph.

Clinical Characteristics of Cases and Treatment

The average patient reported to the outpatient department with complaints of diarrhea with nausea or vomiting of 1 to 2 days duration, a low grade fever up to 101°F, and abdominal pain with cramps.

After completion of physical examination and laboratory procedures, each patient was instructed in measures designed to lessen the risk of future dysentery for self and family. All were also told to return if symptoms and signs became more intense or if they persisted for 2 to 3 days after the start of therapy. Specific drug therapy varied with the preference of the attending medical officer. Tetracycline and oxytetracycline were generally used first until stocks were depleted. Furadantin in tablet form or by suspension was then used. Chloramphenicol was given in cases of persistent infection or when indicated by the results of antibiotic sensitivity studies. No conclusions could be drawn as to the relative efficacy of any particular treatment, but the general impression was that the clinical course of illness of a patient on antibiotics was shorter than that of one on a symptomatic treatment regimen which had been previously in use for treatment of "viral" enteritis. Many of the latter cases had been treated for a week at home without improvement before seeking medical advice.

Epidemiology of the Outbreak

Early in the investigation of the outbreak, the Kenitra water supply system came under suspicion. Of the 169 cases, 154 (91%) occurred in families who used the water supply in Kenitra. The Naval Air Station had its own water treatment plant and separate water distribution system. Local native sanitation practices were meager. Animal and human defecation took place in any convenient vacant field or farmland. Flies were abundant—perhaps more so than usual—during the summer of 1962. The previous winter had been mild; little rain fell between March and November 1962. From 1 November 1962 through 15 January 1963, during which the peak number of cases occurred, there were 18.42 inches of rainfall, over twice the average of 8.77 inches expected during this period.

The Kenitra water supply is obtained from surface water (the river) or from shallow wells. The river is always considered to be contaminated, as are many wells. The latter are not capped or covered and may be drilled at the lower edge of farmland slopes or in valleys. In many places, wells are entirely open. The water treatment plant is of French design. The treatment process includes chlorination and basically is considered adequate. In its distribution, however, the processed water is not chlorinated. Water and sewer mains run in the same underground channels. The sewer pipes have only mud seals at their joints. Often the water in American-occupied villas is grossly silty or smells of sewage.

Water specimens for analysis were obtained from 58 homes, selected at random in the European section of Kenitra where most off-base American homes are located. Collections were made at four periods from 13 October through 8 December 1962. Results of the bacteriologic analysis of specimens are presented in Figure 2.

Figure 2.

Salmonella Alone	Shigella Alone	Salmonella & Shigella	E. coli & Shigella	E. coli Alone	No growth 48 Hrs.
5	18	22	3	1	9

One additional factor in the cause of the outbreak may have been the usual large rotation of personnel and their families between June and August 1962, thus adding a new group of susceptibles in Kenitra. This phenomenon and the existence of many subclinical infections are discussed by Netter et al (1) in connection with another outbreak.

Control of the Outbreak

Normally, new arrivals in Morocco, including families, are given instruction in local health conditions by means of lectures and written material. Instruction includes general sanitation, precautions needed in handling food, and dangers from vector-borne disease. All families are told that water, except that from the Naval Air Station, must be considered contaminated and that it must be boiled or chlorinated before use for drinking, cooking, brushing teeth, or making ice cubes. They are advised to carry water for such purposes from the base to home. They also receive the recommendations to soak locally grown fruits and vegetables in a chlorine solution and to avoid purchase of local meat, meat products, ice cream, and other dairy products.

When the number of cases of gastroenteritis began to exceed the expected, a questionnaire was given to 29 randomly selected cases of salmonellosis or shigellosis to evaluate health conditions and customary sanitary practices within the family. Results obtained from these questionnaires indicated at least two breaks in recommended health practices in each case. The information on basic sanitary practices was then published in the Plan of the Day, in the hope that reemphasis would serve to reduce the incidence of cases.

Discussion

This particular outbreak was similar to the classic occurrences in the 19th century in Hamburg, Germany (water), and in London, England (snow).

All water tested for residual chlorine content, no matter what the original source, was negative. There was no distinct geographic distribution

of the positive cultures obtained from house faucets. No particular water sources could be excluded. The 9% of cases who lived on the Base acquired their illness either by eating in restaurants in Kenitra, by contact with infected children at the Base nursery, or from ice made by a machine which was attended by a Moroccan employee who was proven to be a carrier.

Fly control is virtually impossible. Most of the American occupied villas are unscreened, but windows must be opened for ventilation. Emphasis upon fly control and proper sanitation methods did not reduce the number of cases, but merely made the people aware of the problem at hand.

Many cases of dysentery appeared in the native population during this period of heavy rains and flooding, but statistics are not available. In many instances, entire sections of the native Medina were heavily flooded, forcing people to move to higher ground. This did not occur in the European section because of its elevation.

Summary

A total of 169 known cases of Salmonella or Shigella gastroenteritis were seen in the Outpatient Department over the 6-months period, 1 July 1962 to 1 January 1963. Unlike the 20 reports of salmonellosis outbreaks which occurred in 8 States in 1961 (2), this source was traced to the local town water supply. Treatment was varied in each case with no superiority of one form over another; yet, the fact that antimicrobial medication was given did seem to lessen the severity and duration of the clinical course. Further emphasis on proper sanitation and present health instructions was made.

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Inter-Relationship Between High Fat, High Caloric Diet, Strenuous Exercise, and Serum Lipids

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A study in 1961 (1) on (a) 101 Marine recruits averaging 20.5 years was repeated in 1963 on (b), a group of 111 Marine recruits averaging 18.5 years of age and similar results were obtained. A diet of 4500 calories containing 45% fat, 45% CHO, and 10% protein was followed without significant deviation

for 22 weeks by group (a) and for 11 weeks by group (b). A rigorous physical regimen was administered ranging from the exacting drill and discipline of early training to the strenuous schedule of the combat infantryman during advanced training. Exercise was increased in a gradual manner and the program consisted of 16 hours of daily activity.

There were no statistically significant changes in serum uric acid, lipid phosphorus, total cholesterol, lactic dehydrogenase, and malic dehydrogenase. Weight and blood pressure did not change significantly. Serum content of triglycerides rose significantly and isocitric dehydrogenase dropped significantly. The tests were done serially at 5 to 6 week intervals.

It is suggested that a high-caloric and high-saturated-fat diet (milk, butter, and eggs) may not be atherosclerogenic if sufficient calories are utilized to offset this intake.

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1. Calvy, G. L., et al: Serum Lipids and Enzymes, JAMA 183:1-4, 1963.

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Tetanus Toxoid Immunization in the Nonmilitary Population *

Wesley Furste MD, Columbus, Ohio

The need for nationwide tetanus toxoid immunization is currently receiving attention across the country. In support of an active campaign for civilian immunization, such as the Defense Department has so effectively accomplished in the U. S. Armed Forces, the Ohio Committee on Trauma of the American College of Surgeons presents the following data:

In a recent pilot study of civilians with wounds in Columbus, Ohio, 4% of males and 8% of females under 18 years of age, and 28% of males and 46% of females 18 years or older were considered not to have had adequate tetanus toxoid immunization.

In the World War II battle for Manila in 1945 there were 473 reported cases of tetanus in approximately 12,000 wounded civilians who, as far as is known, had not had tetanus toxoid inoculations before being injured. The incidence of tetanus was almost 40 per 1000 wounded civilians. Mortality rate in these 473 cases was 82. 1%.

The efficiency and safety of tetanus toxoid as a prophylactic agent was proved by the World War II experience of the U. S. Army. Twelve

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* From the Ohio Committee on Trauma, American College of Surgeons, of which Dr. Furste is Chairman of the Subcommittee on Tetanus Prophylaxis. —Editor

cases of tetanus occurred in a series of 2,734,819 hospital admissions for wounds and injuries. Of these 12 cases, 5 (42%) were fatal. The immunization status of the 12 is shown in the following table.

Immunization Status in 12 Cases of Tetanus

	Number of Cases		
	Fatal	Nonfatal	Total
No active immunization	2	4	6
Basic immunization only (three injections)	1	1	2
Basic immunization plus emergency stimulating injection	2	2	4
Totals	5	7	12

Reactions to tetanus toxoid continue to be so extremely rare as to be almost insignificant. Aside from the occasional delayed type of reaction and the rare reaction to extraneous substances, there are few individuals with a true allergic sensitivity to the toxoid protein itself.

There are dangers and complications associated with equine and bovine tetanus antitoxin and with antibiotics recommended for tetanus prophylaxis. Such adverse effects include not only the immediate anaphylactic responses but also the delayed allergic reactions:

(a) Fatal anaphylactic shock followed by death within 1 hour has occurred with only a skin-test dose of 0.1 cc of horse serum tetanus antitoxin in a 1:10 dilution with isotonic sodium chloride solution given intradermally. (b) The incidence of serum sickness, with its variable characteristics of fever, arthritis, lymphadenopathy, neuritis, and central nervous system complications, is between 5% and 15%. (c) The incidence of reactions among 5107 servicemen who received 1,200,000 units of benzathine penicillin G was 1.68%. The widespread use of an antibiotic, such as penicillin, is thus not without hazard, particularly if the drug should be given to hundreds of thousands or millions of the population at a time of national disaster. Even with the best of care, the mortality rate in established tetanus was reported as recently as 1960 to be 21.2%.

Associated with the current international tensions, there is the remote possibility of large numbers of civilians being wounded by either missile attack or actual invasion of the United States mainland.

In view of this evidence, the following ways and means of effecting widespread tetanus toxoid immunization in the civilian population are proposed by the Ohio committee:

Unless there is definite contraindication, offer every person who enters a hospital emergency department, whether wounded or not, an initial or booster dose of tetanus toxoid. Record such an injection on an AMA Personal Health Information Card or similar device. Instruct the patient to see his own physician to complete the basic immunization program if the first dose of a series was administered at this time.

Encourage all members of the civilian population to obtain a basic tetanus toxoid immunization. Put displays in the waiting rooms of physicians' offices. Have notices in the newspapers from medical organizations, the city health commissioner, and the county health commissioner. Send literature to Parent-Teacher associations, 4-H clubs, Boy Scout troops, Girl Scout troops, and similar organizations, churches, and social and athletic clubs. Urge factories to recommend strongly or to require adequate tetanus toxoid immunization at the time of employment. Request colleges and universities to recommend strongly or to require adequate tetanus toxoid immunization at the time of students' matriculation. Recommend to physicians that they give tetanus toxoid when other immunizations such as diphtheria, pertussis, and anterior poliomyelitis are given.

Stimulate physicians to become actively engaged in the immunization campaign: Give talks at hospital general staff and section meetings. Present papers at local, sectional, and national meetings. Submit papers, editorials, and letters to the editors in local, sectional, and national medical journals. Display exhibits at state and national medical meetings.

The active participation of all physicians, together with cooperation from the civilian population, can assure nationwide tetanus toxoid immunization comparable to that already effected in the U.S. Armed Forces.

327 East State Street, Columbus, Ohio

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Editorial on Tetanus Immunization

From JAMA 185(13): 1038, September 28, 1963.

Recent data demonstrate a consistently high fatality rate in spite of a steady but slow decline in tetanus morbidity in the United States. This fact points up the severe nature of the disease once contracted, and the limitations inherent in present methods of therapy.

In 1962, 322 cases of tetanus were reported in this country. A large proportion of these cases are accounted for by the high attack rates among neonates and in adults over 50 years of age. Neonatal tetanus accounted for 10% to 15% of the total cases, but approximately one-third of the fatalities. It is also not widely appreciated that slightly under one-half of all cases and an equivalent proportion of deaths occur in persons over the age of 50, certainly the least actively immunized age group.

The widespread occurrence of Clostridium tetani in the soil and intestinal tracts of animals and man makes it impossible to achieve control or prevention of the disease through eradication of the organism. The occurrence of approximately 50% of tetanus cases in individuals without apparent injury or with injury trivial enough to require no medical attention further emphasizes the fact that immediate antitetanus prophylaxis will be absent in a

majority of instances potentially tetanus-provoking, and that prevention must be based on adequate active immunization. Since in all age groups, tetanus cases occur almost without exception in unimmunized or inadequately immunized persons, it is highly desirable that active immunization be provided to all persons regardless of age.

The availability of diphtheria-tetanus toxoid preparations for adult use which contain small amounts of the diphtheria antigen, makes it possible to provide either primary immunization or booster protection against both of these diseases for older persons with a minimum of local reactions and without the necessity for sensitivity testing. These preparations, together with the already well known diphtheria-pertussis-tetanus and diphtheria-tetanus products used for childhood immunization, make it feasible to protect the entire population against tetanus with safety and to circumvent in many individuals a future need for antitoxin with its attendant dangers.

The disadvantages of passive immunization have been discussed by Dr. Furste, but they are worth emphasizing. Severe and even fatal anaphylactic and delayed allergic reactions have become well known problems when equine and bovine tetanus antitoxin are used. With each exposure to this therapy, the possibility of sensitizing the individual increases, along with the likelihood of diminishing the time during which the circulation of protective levels of antibody persists. The duration of protection afforded by the antitoxin under normal circumstances is about 10 days which allow little resistance against delayed appearance of the disease.

Comparison of tetanus morbidity among wounded residents of Manila and American soldiers reminds us that tetanus indeed follows in the wake of disaster in unimmunized populations. The lesson to be learned in these times of crisis is obvious.

In the light of the hazards of current antitetanus therapy and the occurrence of over one-half of the tetanus cases among those who do not seek medical attention, the urgent need for widespread protection against the disease is readily apparent. This need can be met only through active immunization of all age groups with safe and effective toxoid preparations. An AMA educational program directed at improving our country's tetanus immunization status is now in progress.

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Effect of Gradient Pressure upon Physiologic Systems *

By Ensigns C. S. Mahan, W. S. Lovrinic, W. E. Jones, D. P. Goldstein, all MC USNR, CAPT E. L. Beckman MC USN, and LCDR R. E. DeForest, MC USN.

Dehydration is one of the serious problems resulting from prolonged water immersion following disasters at sea. This dehydration is aggravated by a marked diuresis which apparently is activated through the Gauer-Henry

reflex. The effect of varying the temperature of the water from 95° to 75°F was evaluated with relation to the magnitude of this reflex induced diuresis, both with and without replacement of fluid.

A series of experiments was carried out involving four subjects immersed in water up to neck level for periods of 4, 6, and 9 hours at a temperature of 75°, 85°, and 95°F, respectively. This study showed that during partial body immersion at water temperatures of 85° and 75°F with fluid replacement, the magnitude of the diuresis was the same for all temperatures. When the fluid loss was not replaced, the magnitudes of the diuresis, induced by immersion in 75° and 85°F water, were approximately equal and were about double the urinary output resulting from immersion in water at 95°F. This was attributed to the active peripheral vasoconstriction of the cold water.

A gradual rise in urinary pH was observed during the period of immersion. The urinary specific gravity decreased from over 1.020 to 1.001 - 1.005 at the onset of immersion. The urinary specific gravity remained low throughout the immersion period of the fluid replacement studies as well as the studies in 75° and 85°F water without replacement. The urinary specific gravity approached preimmersion values only in the 95°F immersion without replacement. There was a consistent decrease in heart rate under the conditions of negative pressure breathing. The periods of immersion in water at 85° and 75°F caused a severe heat loss from the body as evidenced by a drop in body core temperature. This loss in body heat caused a drop in core temperature to below 95°F in some subjects immersed in water at 85° and 75°F for 2 hours.

The currently held concept that survival from disaster at sea when immersed in water at temperatures above 70°F is not limited by heat loss becomes suspect in the light of these results.

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* From Aviation Medical Acceleration Laboratory, Johnsville, Penna. BuMed Subtask MR 005.13-4001.06 Report No. 1, 28 December 1962.

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The changing pattern of disease must inevitably affect the attitude of the physician. Most of the major chronic diseases that have now come to the fore progress unnoticed by the patient so that he does not seek treatment until the pathologic process is well established and perhaps incurable.

Socially, industrially, and even politically, we are creating a new age with a different character and a different distribution of disease, setting new problems for solution in the domain of medical science and practice. It begins to appear that the physician of the future will be forced by this changing pattern—whether he likes it or not—to become increasingly concerned with normal and, so far, healthy adults who belong to a particularly vulnerable group. It is difficult to imagine any aspect of medical education more valubale in equipping the physician for this work than social and preventive medicine. —WHO Chronicle 17(9), September 1963.

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MISCELLANY

Need for Additional Professional Health Personnel

Health Professions Educational Assistance Act of 1963 (H. R. 12) * DHEW Indicators, pages XXIX-XXXIV, October 1963.

The average number of persons cared for by each doctor serving as a family physician has risen from 1300 in 1950 to 1700 in 1960 and is expected to rise to 2000 in 1970. The number of young people entering medicine and dentistry must be increased from the current 12,500 to 19,000 a year even if the present physician to population ratio is to be maintained.

The United States lacks sufficient medical school capacity to train the physicians needed. The number of schools for the health professions has been rising slowly or not at all in the past few years. In 1962, there were 87 medical schools, 5 osteopathic schools, 47 dental schools, and 1126 nursing schools. The rise in the numbers of students and graduates has also been slow. As of 1961, there were 141 physicians (MDs and Doctors of Osteopathy) and 56 dentists per 100,000 population in the United States as a whole.

At the same time there were considerable variations among the States with respect to the availability of physicians and dentists. The rate per 100,000 population in 1961 ranged downward from 193 physicians in New York State to 76 in Alabama and 62 in Alaska. The corresponding dentist population ratios ranged from 81 in New York to 22 in South Carolina.

In 1962, one in five newly licensed doctors was trained in foreign medical schools. The bulk of the Nation's doctors, dentists, and public health personnel are trained in State-supported schools. Only 20 States train as many physicians as they use and even fewer States train their own supply of dentists. Most of the States are, in varying degrees, dependent on other States to provide the expensive facilities required for medical and dental education. The relatively few supplying States are financially unable or reluctant to expand their facilities to train health personnel for service in other States and the Federal government. They need financial assistance which can only be provided by the Federal government.

There are only 12 graduate schools of public health in the United States. About 25% of their graduates work in the States where they received their

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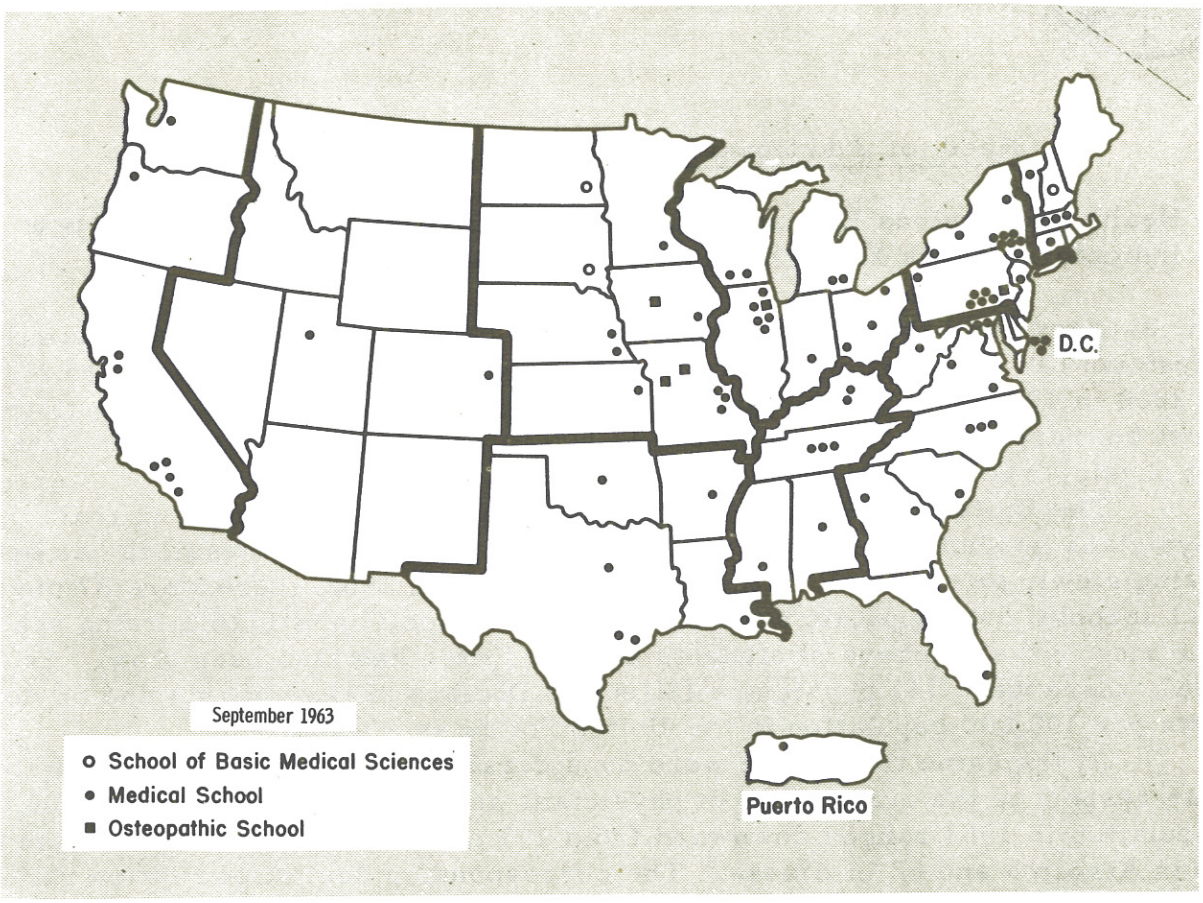
* Prepared by Arthur E. Carpenter, Special Assistant, and Eugenia Sullivan, Research Analyst, on the staff of the Assistant Secretary (for Legislation) DHEW.

training. The States supporting these schools can hardly be expected to fully finance construction of the new facilities necessary to train badly needed public health personnel for service in all States and with the Federal government.

LOCATION OF ALL SCHOOLS EDUCATING PHYSICIANS



There is an urgent need for increased numbers of all types of nurses. A general program in this field is complicated by the variety of nursing education available. Existing programs vary in length from 2 to 4 years. A clear source of need, however, is evident in the 167 collegiate schools of nursing which provide the teachers and administrators required for expansion of all types of professional and practical nurse training. The new legislation accordingly provides assistance grants for collegiate schools of nursing which offer or are preparing to offer basic programs of nursing which lead to baccalaureate or advanced degrees.

Educational facilities for training in optometry, podiatry, and pharmacy now appear adequate to handle all applicants. Construction grants will be available if the need for increased enrollment and availability of qualified students for their utilization can be demonstrated by applicants. A prospective student of medicine or dentistry must be prepared to invest $16,000 to

$20,000 in his education and to purchase expensive equipment before he treats his first paying patient. Many able students from low income families are precluded from entering these fields.

The growth of Federal support for research in the natural and physical sciences has attracted many qualified young people who might otherwise have entered the health professions. The availability of fellowship grants in the science fields has been a particular inducement to the young student of limited means. The student loan provision is an effort to redress in part the imbalance in the relative attractiveness of medicine, dentistry, and science. Medical and dental education must be reasonably available to able students regardless of their means if we are to maintain the high quality of medical and dental care.

It is concluded that provisions of the Health Professions Educational Assistance Act of 1963 should provide new impetus to the construction of medical, dental, and health professions training facilities. Expanded facilities, together with the new availability of student loans on a reasonable basis, will help assure America of an adequate supply of high quality health services in the years ahead.

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Annual Anesthesiology Review Session for the Armed Services

This course is designed for residents who have completed their training in Anesthesiology and desire to take the examination of the American Board of Anesthesiology on or about 27 June 1964.

Inclusive Dates	Deadline Date to Apply
1 - 5 June 1964	15 April 1964

The above scheduled course will be conducted by the U. S. Air Force at Wilford Hall, U. S. Air Force Hospital, Lackland Air Force Base, Texas.

In view of the anticipated shortage of travel funds for Fiscal Year 1964, only a limited number of officers can be authorized to attend this course on travel and per diem orders chargeable against the Bureau of Medicine and Surgery funds. Eligible and interested officers who cannot be provided with travel orders to attend at Navy expense may be issued Authorization Orders by their Commanding Officers following confirmation by this Bureau that space is available in each case. Requests should be forwarded in accordance with BUMED INSTRUCTION 1520. 8 and comply with the deadline date indicated above.

—Training Branch, Professional Div., BuMed

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FROM THE NOTE BOOK

Oak Knoll Doctor Wins Coveted OB-GYN Award

LT Robert C. Cefalo MC USN, in his third year of residency training in obstetrics and gynecology at USNH Oakland, took top honors at the Twelfth Annual Armed Forces Seminar on Obstetrics and Gynecology held at Letterman Army Hospital in San Francisco. Doctor Cefalo received the John Simpson Award given each year for the best presentation by an Armed Forces obstetrician and shared the Lloyd Brothers Award for the outstanding resident paper.

The Oak Knoll Doctor's presentation, titled Occurrence of Hyperlactic Acidemia in Septic Abortions, was chosen from eighty-seven submissions. It was based on investigations made at the hospital's Clinical Investigation Center, and on actual clinical cases seen at the hospital from November 1962 to July 1963. Discussant for the winning paper was Doctor Harold Harper, Professor of Biochemistry and Dean of the Graduate School of Medicine of University of California, and chief consultant for Oak Knoll's Clinical Investigation Center.

The award—an engraved silver bowl—was presented by LTCOL William A. Boyson MC USA, Chief of OB-GYN at Letterman Hospital and director of the seminar. The award is named for COL John Simpson MC USA (Ret), one of the originators of the Annual Armed Forces Seminar on Obstetrics and Gynecology.

Doctor Cefalo is the first resident to receive this award. His presentation also earned half of the $500 prize given by Lloyd Brothers, Inc., pharmaceutical manufacturers, to each district of the American College of Obstetricians and Gynecologists. This prize is presented at the annual meeting of the college along with a suitably inscribed plaque. Sharing it with Doctor Cefalo was CAPT Calvin N. Ladner MC USA from Madigan General Hospital, Tacoma, Wash. Both winners are graduates of Tufts University Medical School, Boston, Mass.

The award winning Oak Knoll doctor interned at Chelsea Naval Hospital following his graduation from Tufts and spent a year with the Atlantic Coast Seabees before reporting to Oak Knoll for his OB-GYN training in August 1961.

—Public Information Office, USNH Oakland, Calif. Forwarded to the Medical News Letter by RADM Cecil Andrews, CO of the Hospital.

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Cholera in Korea. Korea declared Pusan infected with cholera as of 21 September this year, reporting 39 cases and 10 deaths. Seoul had one case as of 23 September. The following countries have also been reported to be infected with cholera:

Burma	India	Pakistan
Federation of Malaya	Indonesia	Philippines
Hong Kong	Macao	Thailand

—DHEW PHS M&M Weekly Rep 12(38), Sept 27, 1963

AVIATION MEDICINE - SPECIAL NOTICE

A Naval Aviation Museum was recently opened at the U. S. Naval Air Station, Pensacola, Fla. The curator of the museum has reserved forty feet of wall space for exhibits depicting contributions of Aviation Medicine to the history of Naval Aviation.

An invitation is extended to all Medical Department activities associated with Naval Aviation to prepare exhibits for the museum. Inquiries should be addressed to the Commanding Officer, U. S. Naval Aviation Medical Center, Pensacola, Fla.

Memorial to CDR Herman E. Hoche MSC USN (Ret)

The University of Minnesota Hospital Administration Alumni Association has established a Special Educational Trust Fund as a memorial to the late CDR Herman E. Hoche MSC USN (Ret) whose death occurred on 21 September 1963. This special fund will be called the Herman E. Hoche Memorial Loan Fund and will become a part of the Association's Educational Trust Fund. Former shipmates of CDR Hoche who desire to participate in this memorial may mail donations to the Association Treasurer, Jerome T. Bieter, 425 Harvard Street, S. E., Minneapolis, Minn. Check should be made payable to the Educational Trust Fund-Minnesota Hospital Administration Alumni Association.

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American Board Certifications

American Board of Obstetrics and Gynecology
LCDR Adam A. McNitzky MC USN

American Board of Pediatrics
LT Charles Neave MC USNR (Active Duty)

American Board of Preventive Medicine in Aviation Medicine
LCDR Michael C. Carver MC USN

American Board of Surgery
CDR George E. Cruft MC USN
LCDR Marion K. Neugebauer MC USN

NOTE: CAPT Loy T. Brown MC USN, Chief, Radiology Service, U. S. Naval Hospital, NNMC, has been honored by election to Fellowship in the American College of Radiology.

DENTAL SECTION

A New Combination for Bleaching Teeth

CAPT Edwin B. Nutting DC USN (Ret.), 2850 6th Avenue, San Diego 3, California; and LT Gerald S. Poe DC USNR. Southern California State Dental Association Journal 31(9): 289-291, September 1963.

A new technique is presented for the bleaching of discolored teeth which have been treated endodontically. Furthermore, the cause of discoloration of pulpless teeth, considerations in case selection, and currently popular bleaching agents and methods, will be briefly reviewed.

Tooth discoloration can be caused by many factors. This paper, however, will be limited to a consideration of discoloration which arises from within the pulp chamber of a pulpless tooth, i. e. a necrotic pulp, residual endodontic filling materials, or medicaments. This limitation is necessary because the bleaching method to be discussed must be accomplished from within the pulp chamber and is not possible unless a root canal filling has been previously placed.

Bleaching Methods: Several techniques have been described to bleach discolored teeth, however, most of these have shared the distinct disadvantage of requiring a lamp in order to activate the bleaching agent. The use of a lamp consumes considerable time (approximately thirty minutes per treatment) and is also laborious in that it requires protective draping and tinted glasses to protect the patient from the heat and light. Consequently it was felt desirable to eliminate the lamp from the bleaching technique.

Recently Spasser reported having successfully used a technique which requires no lamp. His bleaching mixture is sodium perborate and water combined to make a paste which is sealed in the pulp chamber. After reviewing Spasser's report it was decided to combine the two techniques and use Superoxol as the vehicle for the sodium perborate. It was reasoned that since both of these compounds release oxygen the combination of these two chemicals should be more effective than either one by itself. When these two agents are combined the resulting mixture is a white paste which can be easily carried to the tooth on a suitable stainless instrument. If powdered sodium perborate is not available it has been found that the granular form may be rendered into a powder by placing it in the mortar of an automatic amalgamator. It is suggested that a new mortar be used to prevent contamination of the sodium perborate with residual silver amalgam, and that the pestle be replaced with a ball bearing of suitable size.

Preparing this agent requires adding a sufficient quantity of powdered sodium perborate to one or two drops of Superoxol on a glass slab so that the resulting combination is of a white pasty consistency.

The technique for bleaching any pulpless tooth is basically as follows:

1. With round and inverted cone burs remove all material from the coronal portion of the tooth to the level of the cementoenamel junction.
2. Record the shade of the discolored tooth with a shade guide (do this in natural light if possible). This is done to check the progress of the bleaching process. Memory has been found very unreliable for future checks.
3. Isolate the tooth to be bleached with a rubber dam, making sure to lubricate it with cocoa butter or any other lubricant which is not water soluble, to prevent seepage around the isolated tooth. The dam will protect the patient from the bleaching agent and also expedite the entire procedure.
4. Wipe the inside of the prepared tooth with a cotton pellet moistened with chloroform or xylene to further insure the removal of residual sealer, gutta-percha, etc.
5. Prepare the bleaching agent and fill the entire cavity with it; leaving only enough space at the opening for the sealing agent.
6. Seal in the bleach with zinc oxide eugenol cement or "Cavit," bearing in mind that zinc phosphate cement leaks consistently and that the recommended materials produce a more effective seal as shown by Parris and Kapsimalis.
7. It is advisable to have the patient return to the office every three to five days, at which time the tooth shade is observed and compared with the original shade. If insufficient bleaching has taken place a fresh mixture of Superoxol and sodium perborate is placed in the pulp chamber.
8. When the desired shade has been achieved the coronal portion of the tooth is again cleaned thoroughly and swabbed out with chloroform or xylene.
9. Dry the tooth with air and paint the inside of the tooth with acrylic monomer which will help seal the dentinal tubules and prevent discoloration again by leakage.
10. Fill the entire crown with silicate cement or plastic material of the proper shade.

The authors have found that there is usually a definite lightening of the tooth after the first application and that there have rarely been cases which required more than two treatments. However, if the patient returns after the first treatment and there has not been enough lightening then simply repeat steps 1-6. It is desirable to overbleach the tooth slightly as some reversion generally takes place.

Summary: This work presents an approach to bleaching endodontically treated teeth without the use of a heat lamp using a paste made of Sodium Perborate and Superoxol. The method has been found to be clinically effective, simpler and less time consuming than currently popular techniques.

Etiology of tooth discoloration and problems of case selection are also discussed in the complete article.

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The Effects of Heat on Gold Partial Denture Castings

CDR Robert W. Elliott, Jr. DC USN, U. S. NAB, Little Creek, Virginia.
The Journal of Prosthetic Dentistry 13(4): 688-698, July-August, 1963.

Gold alloy partial denture castings are subject to repeated applications of heat and handling which may result in dimensional changes. These applications of heat may be made to change the physical properties of the gold structure in heat treatment or by the addition of metal in soldering.

One definite trend found in this investigation was that the more heat applications a casting received, the greater was the distortion. The greatest distortion seemed to come in the hardening process following annealing. This distortion may be due to the stresses induced in the metals by the transformations taking place in the uniform space lattice of an annealed alloy when it is age hardened.

The fact that greater warpages occurred in the first two experiments in the two castings to which no solder was applied cannot be explained. Interestingly, warpage occurs not only with local but with general applications of heat.

In the third experiment there appeared to be some correlation between the method of carrying and quenching the castings and the amount of warpage. This correlation could be explained by unequal strains that are induced in the casting by the contact of cold tongs and steam bubbles which might cause different rates of precipitation of intermetallic compounds in the parent lattice. Here again, warpage occurred with general as well as local temperature changes.

In the final experiment, some change was noted when the casting was hardened from the initial casting condition. There was no correlation between the methods of handling the castings and the observed warpage. However, the least warpage occurred when castings that had not been previously annealed were hardened. This might be explained by the fact that these castings were already partially hardened in the casting process. Therefore, they would be resistant to further warpage because of the slip interference already present in the metal which had not been removed by annealing.

This study indicates that castings should be hardened by bench cooling following the casting procedure, if there is no objection to polishing a hardened

casting. However, if a softened casting is preferred for polishing, then the casting should be quenched as soon as it appears dark (6 minutes). Then, after the casting has been polished, it can be age hardened without previous annealing. Though the evidence is not conclusive, it would seem wise to carry the castings on trays and quench them with agitation.

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Personnel and Professional Notes

U. S. Navy Dental Corps Continuing Training Program. Recognizing the need for a continuing education program to keep Dental officers of the Navy abreast of the latest developments in dentistry and keyed to a high professional level, the U. S. Naval Dental Corps is offering a series of short postgraduate courses conducted by members of the staff of the U. S. Naval Dental School, Washington, D. C.

"Oral Pathology" will be offered 27-31 January 1964. This course covers the recognition and treatment of oral disease based on knowledge of clinical characteristics and understanding of disease processes. It is designed to increase the knowledge of the dental officer in the fields of oral pathology and oral diagnosis. Developmental disturbances, diseases of the oral mucosa and the jaws, oral manifestations of various systemic diseases, and benign and malignant oral neoplasms are discussed in detail. Their clinical and microscopic characteristics are illustrated with slides. CDR G. H. Green DC USN will be the instructor.

Quotas for the course have been assigned to ComOne, ComThree, ComFour, ComFive, ComSix, ComNine, PRNC, SRNC, CNATRA. These short courses are open to active duty career Dental officers of the Armed Forces in accordance with these quotas established by the Bureau of Medicine and Surgery.

Applications should be received in the Bureau as early as possible and preferably, not less than 4 weeks prior to commencement of the course. The Bureau Professional Advisory Board will make recommendations on all requests, and upon approval by the Surgeon General, applicants will be notified as to the final action. Those approved will be nominated for TAD or authorization orders, as appropriate. Accounting data will be forwarded to individual officers nominated for TAD orders. Staff Dental Officers not utilizing assigned quotas should report this information to BUMED, Code 611, one month prior to the convening date of the course. This will allow the Bureau to fill the quota from other districts.

Stannous Fluoride Prophylaxis Kit. The article entitled "Guidance on Clinical Use of Stannous Fluoride as a Caries Preventive Technic," appearing in Vol. 42, No. 7, of the United States Navy Medical News Letter, stated the stannous fluoride prophylaxis kit is available only through Dr. Joseph C. Muhler. This item is in the process of standardization by the Defense Medical Materiel Board and it is anticipated that, in the near future, it will be available as a

standard stock item. Until that time, it is recommended that the kit be obtained from Mr. A. P. Austin, Winton Hill Technical Center, P. O. Box 599, Cincinnati, Ohio. The cost is $6. 50 per unit.

Eleventh Naval District Offers Short Courses. The Eleventh Naval District is presenting, as part of the continuous training program for dental officers, the following short postgraduate courses of instruction in dentistry:

October 7-8-9, 1963 - "Partial Denture Construction"
Instructor - CAPT S. T. Elder DC USN
December 2-3-4, 1963 - "Dental Operating Room Efficiency"
Instructors - CDR W. J. Jasper DC USN
LT A. E. DeStefano DC USNR
February 3-4-5, 1964 - "Practical Periodontics"
Instructor - CAPT A. L. Wallace DC USN
April 6-7-8, 1964 - Practical Endodontics"
Instructor - CAPT C. E. Rudolph DC USN

All courses will be conducted at the Dental Department, U. S. Naval Training Center, San Diego, California. Persons interested should contact Commandant, Eleventh Naval District, for further information.

Dental Technician Awarded Navy Commendation Medal. The Secretary of the Navy awarded the Navy Commendation Medal to Dental Technician Third Class Bruce E. Thon on 27 June 1963, who was a member of a recreation party on board the Commander Fleet Activities, Yokosuka recreation boat, the "Miss Fay." Thon saved the life of a shipmate, Larry W. Delaney, Dentalman, USN. The incident occurred while the "Miss Fay" was anchored off the beach of Katsuyama, Japan. Thon was resting on the beach after swimming ashore from the recreation boat when Delaney also attempted to swim ashore, but not realizing his own limitations, tired easily and could swim no farther. Delaney was in danger of drowning when Thon, who was already tired, and at the risk of his own life, came to Delaney's rescue. Thon was able to hold Delaney's face above water until a small boat from the "Miss Fay" picked them up. Both men were unconscious when they were received on board the "Miss Fay." They are stationed at the U. S. Navy Dental Clinic, Yokosuka, Japan.

Citation of Outstanding Dental Technician Performance. In addition to higher enlisted performance evaluation marks, the Dental Department, U. S. Naval Air Station, Atsugi, Japan recognizes the outstanding efforts of dental technicians, E-6 and below, by means of a quarterly award.

Nominations are made to a board composed of the senior officers and enlisted personnel on board. Eligibility is based on sustained professional performance, military behavior and appearance, and leadership abilities. The selectee is honored by presentation of a personal citation, a 24-hour "holiday", and the addition of his name to a permanent plaque.

CAPT N. B. Shipley DC USN is Dental Officer of this department.

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PREVENTIVE MEDICINE

Influenza Immunizations 1963-64 Winter Season*

Although the winter season of 1963-1964 is not expected to produce widespread outbreaks of influenza, isolated local outbreaks may be expected. Because the west coast of the United States was spared during the past winter it has a somewhat greater likelihood of experiencing influenza A during the coming season.

All persons on active duty in the Navy and Marine Corps will receive influenza immunization and annual reimmunization in accordance with current BUMED Instructions, 6230.1 series. Dependents and certain other personnel may receive influenza immunizations on a voluntary basis in accordance with this series of Instructions. For most personnel, immunizations are given during the month of October, though, in some areas of the world, this may be altered to anticipate the local influenza season.

Past experience with influenza strongly emphasizes that certain groups of the population are in greater risk of death or serious illness should they acquire the disease. These groups include persons of all ages who suffer from chronic, debilitating disease. Patients with rheumatic heart disease and other cardiovascular disorders, as well as those with chronic bronchopulmonary disease, diabetes mellitus, or Addison's disease should be immunized. Persons in the age groups of over 45 and particularly those over 60 years, and pregnant women also represent groups at greater risk.

Because of the delay (usually 7-14 days) in the development of antibodies from the polyvalent vaccine currently in use, it is important that immunization programs be carried out before influenza is apt to occur in the local area.

—— Communicable Disease Branch, BuMed

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* USPHS Surgeon General's Advisory Committee on Influenza

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Medical Literature for Africa. Tons of medical literature and other medical supplies donated by the people of the United States were distributed to seven African countries, Brazil, and the island of Tristan da Cunha by the U. S. Navy's Project Handclasp during the recent South Atlantic Amity IV Cruise. U. S. DHEW PHS Public Health Reports 78(9): 811, September 1963.

Dengue Fever

From Chief, Surveillance Section, DHEW PHS, Communicable Disease Center, Atlanta, Ga., 30 August 1963.

During the past five months, April through August 1963, and most particularly during July and August, several hundred cases of an illness closely resembling dengue fever have been observed both in Jamaica and in Puerto Rico (1). On clinical grounds the disease has been identified as dengue fever and is characterized by a sudden onset, very severe back and muscle pain, headache, stiff neck, chills and high fever, and occasionally a skin rash varying in extent, type and time of appearance.

Laboratory studies, in progress, are incomplete. However, titer rises to Group B arbovirus infection have been demonstrated in sera from cases in both Jamaica and Puerto Rico. At least six individuals manifested the disease while visiting in the United States during August but are believed, by incubation and travel dates, to have acquired dengue fever either in Jamaica or Puerto Rico (1). Although dengue fever usually is not a fatal disease, its symptoms may be very severe during the acute phase and the convalescent phase may be equally debilitating. Furthermore, there is a very real possibility that the disease cycle can be established in the United States, for the Aedes aegypti mosquito is prevalent in many areas of this country.

Because of the frequency of travel between these countries and the United States, the possible confusion in differential diagnosis, and the potential establishment of an epidemic within the continental United States, the following brief review has been prepared from some of the literature on dengue fever. At present, there is no known dengue reservoir in the United States, although the Aedes aegypti mosquito is present in many areas, especially the South.

Aedes aegypti is present throughout the Southern United States as far west as Texas. It is known to have been temporarily present at various times as far west as California. It is believed that this mosquito can be carried most anywhere in the U. S., surviving temporarily. The South is more conducive to its continual propagation. Despite improvements in environmental sanitation, the mosquito remains. In order to continue dengue surveillance for the detection of its introduction or presence in receptive areas where the Aedes mosquito is present in the U. S. the "Communicable Disease Center requests immediate telephonic notification of cases occurring in yellow fever receptive zones and offers laboratory assistance in diagnosis of any suspected case."

The most informative and concise discussions of dengue are the chapters in Manson's Tropical Diseases (2), Virus and Rickettsial Diseases of Man (3), and A Manual of Tropical Medicine (4).

History. Dengue fever's numerous synonyms include: break bone fever, dandy fever, denguero, bouquet fever, giraffe fever, polka fever, five-day fever and seven-day fever (3).

Sabin credits David Bylon with the first description of dengue (3). Bylon ovserved an epidemic of what he called "Joint fever" in Batavia, Java, in 1779. The first dengue epidemic in the U. S. was probably the "bilious remitting fever"

described by Benjamin Rush in 1780 in Philadelphia (3). The U. S. Public Health Service has been concerned with four outbreaks of dengue in the past 35 years:

1922 - Florida to Texas (1-2 million cases)
1934 - Florida to Georgia (15,000 cases)
1943 - Hawaii (1400 cases)
1945 - Louisiana (several hundred cases)

In 1922, the most severe epidemic of dengue occurred in the United States. Many cases were reported as far north as Philadelphia. In Texas, the epidemic began in Galveston in June, 1922 and quickly spread over all of eastern and central Texas and into neighboring States, resulting in an estimated 500,000 to 600,000 cases in Texas alone.

Other major epidemics during this century occurred in Greece (1928), Hawaii (1943-44), Japan (1944-45), South Africa (1926-27), and Panama (1941-42).

The Aedes aegypti mosquito was first incriminated as the responsible vector for dengue by Bancroft in 1906 (3), according to Sabin. Simmons, et al, in 1931, also demonstrated that certain species of monkeys may be infected and that the transmission of dengue can be by mosquitoes from monkey to monkey and from monkey to man (3).

Clinical Features. The incubation period is stated to vary from 2.5 to 15 days with the usual range being from 5 to 8 days (3). Sabin states the incubation period depends upon the amount of virus introduced (3).

An excellent account of the symptomatology is presented by Manson-Bahr (2), p. 360-362. Dengue Types 3 and 4 have been associated with hemorrhagic manifestations. Although petechiae may be seen in Types 1 and 2, the hemorrhagic manifestations appear to be rare.

Pathology. Because dengue fever (Types 1 and 2) is usually a non-fatal disease, pathological studies are very limited. Degenerative changes in the liver, kidneys, heart, or brain, and hemorrhagic manifestations of varying extent have been described. Two of four patients in Thornwood's study demonstrated hydrothorax (6).

Epidemiology. At least four immunologic types of dengue virus are believed to exist. Types 1 and 2 accounted for the known dengue epidemics described before the early 1950s. Types 3 and 4 were identified by Hammon (7) from outbreaks in the Philippines. Type 3 was isolated from an epidemic in Manila during 1956, which closely resembled an outbreak in the same area two years previous, and which had been called Philippine Hemorrhagic Fever by Quintus (7). The 1956 epidemic occurred during the rainy season when more than 750 cases of hemorrhagic fever were reported in Manila from July through October. Approximately 10 percent of these cases were fatal and with few exceptions the disease occurred in children predominantly below the age of 6. All were orientals in urban and suburban areas where Aedes aegypti were present in relatively large numbers. Hammon happened to be in the area doing field research work and studied this epidemic.

Hammon, in personal correspondence with Thornwood, stated in "reference to dengue Types 3 and 4, I remember with great vividness that in general in the Philippines in 1956, when a large epidemic occurred, that the diagnosis

of "influenza" was commonly attributed to mild febrile disease that was occurring at the same time and frequently in the same family, or same general area, as cases of hemorrhagic fever. We collected blood specimens from a very large number of these persons and found they had the same type of antibody rise as did cases of hemorrhagic fever, and from a number of these so-called "influenza" cases we isolated the same strains of dengue virus. I am, therefore, convinced that a mild febrile illness without rash, hemorrhages, or shock is a common disease manifestation of the same viruses. Rather similar observations were made subsequently in specimens which we have received from Manila and elsewhere (7)."

A clinical review of 52 cases of dengue or dengue-like illness by Thornwood (7) revealed that 46 percent had some type of hemorrhage. Many patients went into shock. A similar disease entity occurred in Thailand in 1958, which was called Bangkok Hemorrhagic Fever. From this epidemic Hammon isolated dengue Type 4 (7).

In contrast to the 10 percent mortality of Type 3, the mortality from Types 1 and 2 is about 3 per 10,000 (3).

The disease can exist wherever the Aedes mosquito family occurs. Aedes aegypti, Aedes albopictus and Aedes hebrideus are the only proved vectors of the dengue virus, although Aedes polynesiensis may serve as a natural vector of dengue, also. A single infected mosquito can transmit the infection (3). According to experiments by Siler, the blood is infective to the mosquito from 18 hours before onset to the end of the third day of illness. From 11 to 14 days are required before the mosquito becomes infective, but then it retains this capability for the remainder of its life span (2), which may be as long as three months (7). Infected mosquitoes cannot pass the virus on to future generations via the eggs (7).

Manson-Bahr (2) states, "The characteristic of dengue fever is its tendency to recur at intervals of years, sometimes in pandemic waves... The epidemic may last for one season or may be spread over several years. Between them, sporadic cases occur, by means of which the virus is maintained. When dengue spreads beyond its ordinary tropical limits, as for example in the epidemics of Philadelphia and Asia Minor, extension occurs only during the hottest part of the year - in the late summer and early autumn. Epidemics occur generally after the rainy season.... It appears to prefer the coast line, and the deltas and valleys of great rivers, to the interior of continents (2)."

Immunity. The degree of permanency of immunity conferred by an attack of dengue appears to be controversial. Sabin and Gordon state that dengue infection provides a long lasting immunity (4), while Manson-Bahr states, "the immunity in dengue does not last more than six months (2)."

Treatment. There is no effective antimicrobial therapy for dengue. Treatment is symptomatic.

Prevention. There is no commercially available vaccine at present. Attempts to immunize with vaccines in the past apparently have not provided significant results. One attenuated live vaccine is currently under investigation (8). The primary prophylactic measures against dengue fever consist of the control or eradication of the Aedes mosquitoes.

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1. Morbidity and Mortality Weekly Report, Vol. 12, No. 33, p. 270, 276, 278, 279, and 284; Vol. 12, No. 37, p. 302 and 308; Vol. 12, No. 38, p. 310.
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The territories of Chile and Costa Rica were recently declared free from Aedes aegypti, the vector of urban yellow fever; this means that this dangerous mosquito has now been eliminated from 13 countries and 3 political units in the Americas. It is hoped that its eradication from the whole continent will be completed by 1966. WHO Chronicle 16(2): 60, February 1962.

Communicable Diseases

Dr. C. Mani, WHO Regional Director, South East Asia, New Delhi, India, Press Release SEAR #726, 1 September 1963

South East Region includes nine Member Countries: Afghanistan, Burma, Ceylon, India, Indonesia, Maldive Islands (United Kingdom), Mongolia, Nepal and Thailand.

Malaria. The main emphasis in WHO's work in South East Asia continued to be on communicable diseases which accounted for about 46% of the regional budget. The malaria eradication drive in the Region still accounts for the bulk of the global malaria eradication campaign sponsored by WHO. The national malaria eradication services in South East Asia have gained considerable experience, the report says, and, with the assistance of UNICEF, WHO and USAID, the programs in most of the countries continue to make steady progress. The present position is:

Total population	635.4 million
Population at malaria risk	600.3 million
Population protected	544.9 million
Eradication in preparatory phase	8.9 million
Population still unprotected	46.4 million

This shows an increase of 35 million over last year in the number of people protected against malaria.

Smallpox continues to take a heavy toll of life. In all, about 40,000 cases and 10,000 deaths were notified in the Region in 1962, the majority from India, which at the end of 1962 started its national smallpox-eradication program, the largest in the world. It is expected that the attack phase will be completed within 2 years.

Leprosy. There was increased activity in the national leprosy control campaigns in Burma, Indonesia and Thailand. Assistance from WHO and UNICEF was increased. In Burma the number of cases under treatment has risen from 46,000 in 1958 to over 92,000 at the end of 1962. In Nepal, a WHO leprologist completed a survey of the nature and extent of leprosy in Kathmandu Valley. He estimated that there are 10 cases per 1,000 population. In Thailand the number of registered leprosy cases has increased from 4,327 in 1956 to 67,847 at the end of 1962.

Filariasis. Filarial infections are widespread in Burma, Ceylon, Indonesia, Thailand and throughout India except in the north. In India alone over 64 million people are estimated to live in areas where transmission occurs. ——Prev Med Div., BuMed.

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Water Chestnuts or Water Nuts from Cholera Infected Areas

From Chief, Division of Foreign Quarantine DHEW PHS, Washington D. C. 27 August 1963

The Department of Health, Education, and Welfare, Public Health Service, Washington, D. C. expects to issue a directive prohibiting importation of several categories of foodstuffs from cholera infected areas. Meanwhile, the following applies, effective immediately, to raw water chestnuts or water nuts arriving from cholera infected areas:

The quarantine officer shall permit their entry only if: "They are bound for a place where they are to be processed by boiling or steaming, and the quarantine officer has made arrangements with the local health officer concerned, whereby the latter will ensure that prompt processing, and the sanitation procedures of those concerned with the processing, provide adequate protection against the spread of cholera."

The above restriction is of interest in relation to General Order No.20.

(Prev Med Div., BuMed)

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Danger! Please Don't Eat the Flowers

Good Health for Wyoming VIII (8), 1 May 1963

A warning that bulbs and seeds for the home flower garden could be a source of poisoning to children has been issued by Dr. Paul V. Joliet, Chief of the Division of Accident Prevention of the U. S. Public Health Service.

"Reports to the Service's National Clearinghouse for Poison Control Centers, especially at this time of year, tell of children eating bulbs or seeds," Dr. Joliet said. Some of the cases involve newly purchased bulbs and seeds that have been treated with chemicals to prevent deterioration and insect damage, but even untreated bulbs and some seeds can be harmful.

"Parts of many plants and shrubs are poisonous," Dr. Joliet said, "and sometimes information on their toxicity is difficult to find." While none of the reported victims died, bulbs, seeds, and other parts of plants can produce severe internal disturbances. Gardeners should keep in mind that young children are very likely to "taste test" he warned.

The list of poisonous cultivated plants was prepared for your safety. In addition to listing the parts of the plants which are particularly dangerous an asterisk has been placed beside those which can be fatal if taken in quantities which a child might eat.

Plants	Poison Part	Plants	Poison Part
*Elephant ear	Any	*Dumb cane	Any
*Narcissus	Bulb	Spider lily	Bulb
*Four o'clock	Root, seed	*Iris	underground stem
Columbine	Berry	*Pinks	Seed
*Cyclamen	Tuber	*Mock orange	Fruit
*Ivy	Leaves	*Spanish bayonet	Root
*Potato	Seeds, sprouts	*Bittersweet	Berry
*Pimpernel	Any	*Castor bean	Seed
*Oleander	Leaves	*Foxglove	Leaves
*Lily-of-the Valley	Any	*Scotch broom	Seed
*Burning bush	Leaves	*Bluebonnets	Seed
Sweet Pea	Stem	*Tulip	Bulb
*Jimson weed	Any	*Mountain laurel	Any
*Rhododendron	Any	*Monkshood	Root

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Poliomyelitis 1962 Final Report

Poliomyelitis Surveillance Unit, CDC, PHS, Atlanta, Ga., Rpt. No. 277: 5-10, 7 June 1963

During 1962, a total of 909 cases of poliomyelitis was reported to the Poliomyelitis Surveillance Unit on preliminary individual surveillance forms. Follow-up reports 60 days after onset of illness on 866 of these cases (97.5%) were received.

The "Best Available Paralytic Case Count" is 683 and consists of the 666 cases with residual paralysis plus the 17 cases with the preliminary classification "paralytic," but without known follow-up.

The "Best Available Non-paralytic Case Count" is composed of (1) Cases preliminarily reported as paralytic poliomyelitis but without residual paralysis at the time of final classification 80 cases; (2) Nonparalytic poliomyelitis 92 cases; (3) Aseptic meningitis 43 cases; (4) Five cases whose preliminary diagnoses were nonparalytic polio but without follow-up. This total of 218 cases includes infections caused by polioviruses as well as other viruses.

Paralytic cases were concentrated in the preschool age group (49.5%) whereas the nonparalytic cases were distributed more uniformly throughout childhood. Of the paralytic cases, 64% were unvaccinated compared to 41% of the nonparalytic cases. Of the paralytic cases, 21% had received 3 or more doses of inactivated poliomyelitis vaccine, compared to 42% among the nonparalytic cases.

Forty-seven fatalities were attributed to poliomyelitis during the year 1962, 92% having had bulbar involvement. Case-fatality rate increased with age, being lowest among preschool children and highest in the over 40 age group; 30 of the 44 had received no vaccine. Specimens for virologic study were obtained from 464 (68%) of the paralytic poliomyelitis cases. Isolates were

obtained from 401 of these 464, 397 of the 401 being polioviruses as follows: Type I, 294; Type II, 8; Type III, 95. Of the Type I cases, 31.2% were from Texas.

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Hemorrhagic Fever in Bolivia

WHO Wkly Epid Rpt, XXXV (39): 217-218, 25 Sep 1963

With the cooperation and collaboration of the Bolivian authorities and of the air services of the United States military agencies, the World Health Organization's research team (Middle America Research Unit, U. S. Public Health Service, and U. S. National Institutes of Health) has been able to obtain specimens and information that are proving most useful in studying the cause and nature of the epidemics which have occurred lately in Beni Department of Bolivia.

During 1962, it was possible to obtain only sera samples, as facilities were lacking to obtain, preserve and transport to the laboratory suitable specimens. Subsequent studies on these sera revealed a relationship to the Junin virus incriminated as the causative agent of "mal de los rastrojos" or hemorrhagic fever in Argentina. Accordingly, plans and arrangements were made for an appropriately equipped epidemiological research team to return to the area at the beginning of the following epidemic period in December 1962. This time many specimens--human, animal, and entomological were obtained and flown out for laboratory study and identification. Also, advice and help were provided the officials and the populace of the area on preventive measures and the handling of clinical cases, based in part on experience with hemorrhagic fever cases in Korea.

In the research laboratories, various virus isolates have been obtained from human specimens and from ticks, and a large number of nonclinical, acute and convalescent sera samples are being studied. Attempts are being made to produce a vaccine against the disease and convalescent serum is being produced. Studies are continuing on the epidemiology of the disease and the ecology of the virus; these aspects are quite complicated.

Current work has tended to confirm the belief that the virus from the San Joaquin area in the northeastern part of Beni Department, Bolivia, is very closely related or identical to the Juin virus from Argentina. The full geographical distribution of the disease is not yet known but such information could be expected from an appropriate surveillance program.

Trials of a combined poliomyelitis and DTTAB (diphtheria, tetanus, TAB) vaccine have given only partially satisfactory results, apparently because of interference between the vaccines. The precise nature of the interference remains obscure, but is thought that non-specific immune factors may be involved. WHO Chronicle 16(11): 405, November 1962

Did you know:

That solid slugs of coal or iron ore and plastic capsules containing wheat or chemicals can be shipped across the country in pipelines? (1)

That gout is estimated to occur in at least 300,000 Americans? (2)

That U. S. children drink very little tap water, and get most of their liquid requirements in the form of juices, milk and soft drinks? The average U. S. child drinks less than a pint of water a day, which represents less than one-fourth of his total liquid intake. The average water intake remains constant with increasing age, and the intake of juice, milk, and soda pop increases. (3)

That in 1922 the total average per capita fat consumption in the U. S. was 43.1 pounds; in 1961, 49.1 pounds. Use of hydrogenated fats (margarine and shortening) increased from 8.4 pounds in 1922 to 22.7 in 1961. Butter consumption decreased from 17.1 pounds to 7.4 during this period. Use of oils (cooking and salad) increased from 7.2 pounds in 1939 to 11.2 in 1961. (4)

That a 3-year nationwide campaign to vaccinate 3 million Bolivians, 86% of the population, against smallpox will begin this year as the result of an agreement signed by the Pan American Sanitary Bureau and the Bolivian government?

The Bureau, Regional Office for the World Health Organization, has allocated $60,000 for technical assistance, vehicles, and equipment and for fellowships to train Bolivian public health workers in eradication techniques in schools abroad. Bolivia will spend $78,000 in local currency in addition to the salaries of 53 of its permanent public health workers assigned to the campaign. Bolivia's National Institute of Hygiene will manufacture the dried smallpox vaccine to be used in the campaign. (5)

That fingernails grow more slowly as you age? Dr. William B. Bean of the University of Iowa, reported in Archives of Internal Medicine, April, 1963, that he measured the growth rate of his left thumbnail monthly for more than 20 years, starting at age 32. A sharp decline in growth rate began at age 49 and seems to be continuing. (6)

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Fire Extinguisher for Auto

Safety Review, Vol. 20 (9): 16, National Safety Council

The wise motorist carries a fully charged fire extinguisher in his car at all times. While your auto may never catch fire, there is always the possibility of needing one to aid another motorist.

The preferred extinguisher is the stored-pressure dry-chemical type, says the National Safety Council. This type can be used on any kind of fire and does not create toxic gases as do vaporizing liquid types. It should have at least 2 1/2 pounds capacity.

Two kinds of such extinguishers are available. One uses a throwaway refill cylinder. The other must be taken to an extinguisher service shop for recharging. Either is suitable.

The extinguisher should be reserved for emergency use only. If you intend to use an extinguisher for other purposes, such as putting out a campfire, carry spares.

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If You Love Your Family*

CDR Harry A. Burns USN, Inspector of Naval Material, Atlanta, Ga.

For the price of an ordinary pair of shoes I recently purchased my son's life. No shoes were actually involved; merely a comparative way of indicating the cost of one seat belt installed in my newly purchased (now completely demolished) station wagon.

On a quiet summer night my 17-year-old son and a companion were returning home. As the car crossed railroad tracks, unguarded by warning lights or crossbars, it was struck by a train. The companion was hurled from the car and instantly killed. My son was injured, but, by virtue of his seat belt, survived.

One investigator told me: "This is my job. I've seen a lot of demolished autos, but this is about the most. It's amazing that anyone could have come out of it alive." A veteran police officer agreed with the foregoing and added: "The only thing intact in that car is the steering wheel." The steering wheel would have been demolished, too, save for that seat belt which kept my son's chest away from it.

God willing, he will soon go to college and into a new world of opportunity. Neither his mother nor I will ever forget how close he came to not having this chance. With utter sincerity I say to you: Do More Than Think About Seat Belts for Your Car. Buy Them. And When You Buy Them, Wear Them!

For the price of a pair of shoes, I bought a life. It was the biggest bargain I ever got.

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Food-Poisoning Potential of the Enterococci

Deibel, R.H. and Silliker, J.H., Jl of Bacteriology, Vol. 85(4): 827, April 1963.

A total of 23 enterococcus strains were fed to two and sometimes three human volunteers in an effort to elicit food-poisoning symptoms. Each culture was consumed after it was grown in whole sterile milk or on the surface of commercially sterile ham slices. Six strains of Streptococcus faecalis var. liquefaciens were consumed after complete liquefaction of gelatin. In addition, strains of S. faecalis were consumed after having been grown in media which altered the energy metabolism (arginine, gluconate, malate, and pyruvate). In no instance were any of the above conditions of growth conductive to the production of food-poisoning symptoms in the volunteers. Moreover, no evidence was found to indicate that either the age of the culture or the disruption of the cell was a factor in the production or release of a toxic principle. It would appear that until the environmental conditions (if any) for food poisoning are defined the evidence obtained suggests that the association of enterococci and food poisoning is questionable.

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* Every year well over 100,000 people are killed on the roads of the world. The tragedy of road accidents is that they involve particularly the young and adventurous, taking their highest toll among males between 15 and 30 years of age. Thus, as well as causing personal suffering and bereavement, road casualties represent a serious loss to the community. WHO Chronicle 16(6): 193-203, June 1963

RESERVE SECTION

Department of Defense's Distinguished Civilian Service Award to Doctor Alpen of USNRDL *

Official U. S. Navy Photograph
USNRDL, San Francisco, Calif.

Dr. Edward L. Alpen of the Naval Radiological Defense Laboratory at San Francisco, last month, received the Department of Defense's Distinguished Civilian Service Award--the highest honor conferred upon civilian employees of the Defense Department. The presentation was made at the Pentagon by Assistant Secretary of Defense, The Honorable Norman S. Paul, following the reading of the citation by the Secretary of the Navy, The Honorable Fred Korth. Dr. Alpen heads the Biological and Medical Sciences Division of the Navy's radiological research activity.

Dr. Alpen was cited for "his extraordinary research work in the development of fundamentally new and basic information on the biological effects of ionizing radiation. Dr. Alpens research findings have had a highly significant impact on basic fleet operating doctrine, on weapons design and on the military operation of all three military departments. Dr. Alpen's resourcefulness and the pioneer nature of his accomplishments have contributed greatly to this nation's defense program and won recognition at the highest level within the Department of Defense."

Witnessing the presentation were high ranking military and civilian scientists representing each of the Armed Services and including RADM W. A. Brockett, Chief, Bureau of Ships; RADM C. A. Curtze, Deputy Chief, BuShips; RADM E. C. Kenney, Chief, Bureau of Medicine; RADM C. Galloway, Commanding Officer, National Naval Medical Center, Bethesda, Md; and Dr. Alpen's

wife, Wynella, and their daughters, Angela, 11, and Jeannette, 7.

This is the second time that a scientist at the Laboratory has received one of the six annual DOD Distinguished Civilian Service Awards. No other Government activity has earned two. The other recipient (in May 1960) was Dr. Paul Carter Tompkins, Scientific Director of USNRDL from 1951-1960, and now Executive Director of the Federal Radiation Council in Washington, D. C.

In 1962 Dr. Alpen received the Secretary of the Navy's $5,000 Award for Distinguished Achievement in Science, based on his radiological defense doctrines.

A native of San Francisco and now residing at 1743 Lexington Ave., San Mateo, Dr. Alpen was graduated from Burlingame High School and the University of California. He served as a Navy officer during World War II. In 1951 he was called back into service and stationed at USNRDL, where he remained as a civilian upon his discharge from active duty in September, 1952. Dr. Alpen holds the rank of Commander in the Medical Service Corps of the Naval Reserve.

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* From the 12th Naval District Public Information Office, 4 October 1963.

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